

REMARKS

Applicant acknowledges receipt of an Office Action dated May 19, 2006. In this response Applicants have amended claim 8. Following entry of these amendments, claims 1-12 are pending in the application.

Reconsideration of the present application is respectfully requested in view of the foregoing amendments and the remarks which follow.

Rejections Under 35 U.S.C. § 112

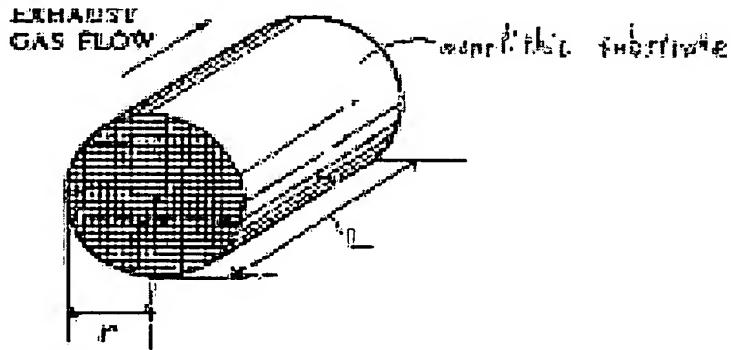
Claim 8 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. This rejection is respectfully traversed.

Claim 8 has been amended to overcome this rejection. Applicant submits that the language of claim 8 would be clear to one of ordinary skill in the art because one of ordinary skill in the art would be able to determine the volume of a "monolithic catalyst substrate." For example, one of ordinary skill in the art would be able to calculate the volume of a monolithic substrate by using the formula:

$$\text{Volume (liter)} = \text{Cross-sectional area} \times \text{Length}$$

In the case of a cylindrical monolithic substrate, the volume can be calculated by the following formula, and as indicated by the following figure:

$$\text{Volume (liter)} = \text{Radius (r)} \times \text{Radius (r)} \times \pi \times \text{Length (L)}$$



Withdrawal of this rejection is respectfully requested.

Rejections under 35 U.S.C. § 103

Claims 1-5, 8, 9, and 11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,548,034 (hereafter “Takamura et al.”) in view of U.S. Patent No. 5,364,984 (hereafter “Arntz et al.”). This rejection is respectfully traversed.

Takamura et al. discloses a process for reducing a concentration of carbon monoxide in a hydrogen-containing gas using a catalyst. See Takamura et al. at column 1, lines 9-11. The catalyst contains platinum and at least one metal selected from the group consisting of cobalt, nickel, copper and manganese. See Takamura et al. at column 4, lines 7-9. Takamura et al. discloses that a reaction temperature is usually in a range of 40 to 200°C, where an amount of the catalyst used in the selective oxidation is 100 to 100,000 [l/h] in terms of a gas hourly space velocity. See Takamura et al. at column 4, lines 50-62. However, as noted on page 3 of the Office Action, Takarmura et al. fails to disclose a carbon monoxide adsorption amount being adjusted from 0.1 to 3 mL/cat.g.

Arntz et al. discloses a process for the preparation of 1,3-propanediol by the hydrogenation of hydroxypropionaldehyde (HPA) in aqueous solution on a fixed bed catalyst. See Arntz et al. at col. 1, lines 7-10. Arntz et al. discloses platinum on a catalyst carrier with a carbon monoxide adsorption from 0.5 to 1.6 ml of CO/g of catalyst. See Arntz et al. at column 3, lines 53-54. Arntz et al. further discloses an operating temperature of 60 °C. See Arntz et al. at col. 8, lines 21-26.

It would not have been obvious to modify the process of Takamura et al. by the teachings of Arntz et al. to provide the method of claim 1 or 12. The teachings of Takamura et al. and Arntz et al. regard widely divergent technologies, i.e. a process for reducing carbon monoxide in hydrogen-containing gas and a process for the preparation of 1,3-propanediol. The catalyst of Takamura et al. functions as a carbon monoxide concentration reducing catalyst which hardly reacts with hydrogen. In contrast, the catalyst of Arntz et al. functions as a hydrogenation catalyst which accelerates a hydrogenation of an aldehyde. The function of the catalyst disclosed by Arntz et al. is contrary to that of Takamura et al. Therefore, Arntz et al. teaches away from Takamura et al. and it would not have been obvious to combine the teachings of Takamura et al. and Arntz et al. because such a modification would change the principle of operation of the process disclosed by Takamura et al. See M.P.E.P. § 2143.01. Furthermore, one of ordinary skill would not have had a reasonable expectation of success in

combining the two references because of the different functions of the processes of Takamura et al. and Arntz et al. See M.P.E.P. § 2143.02. Furthermore, one of ordinary skill would not have a reasonable expectation of success in combining Takamura et al. and Arntz et al. to make the claimed process because Arntz et al. discloses an operating temperature of 60 °C, which is lower than that recited by claims 1 and 12.

Furthermore, it would not have been obvious to one of ordinary skill to look to the teachings of Arntz et al. when addressing the problem of faced by the Applicant, i.e. reducing carbon monoxide concentration in a mixed gas containing hydrogen, because the process of Arntz et al. addresses the problem of contamination in a hydrogenation process by catalytic material and is in a different field of endeavor than the claimed process. Therefore, it would not have been obvious to combine the teachings of Takamura et al. and Arntz et al. to make the process of claim 1 or 12.

Nor would one of ordinary skill have had a motivation to combine the teachings of Takamura et al. and Arntz et al. A basic requirement of a *prima facie* case of obviousness is a suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill, to modify a reference or to combine two references. See M.P.E.P. §§ 2143, 2143.01. The Office states that one of ordinary skill would have combined the teachings of Takamura et al. and Arntz et al. because Arntz et al. teaches that the amount of carbon monoxide reduction is desirable. See page 3 of the Office Action. However, Arntz et al. does not provide such a teaching, nor does the Office indicate where Arntz et al. provides such a teaching. Moreover, merely stating that a combination is “desirable” does not provide a motivation for why one of ordinary skill would combine references.

Claims 6 and 7 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Takamura et al. in view of Arntz et al. as applied to claim 3, and further in view of U.S. Patent No. 6,913,739 (hereafter “Shore et al.”). This rejection is respectfully traversed. Shore et al. fails to remedy the deficiencies of Takamura et al. and Arntz et al. Withdrawal of this rejection is respectfully requested.

Claim 10 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Takamura et al. in view of Arntz et al. as applied to claim 1, and further in view of U.S. Patent No. 3,584,603 (hereafter “Shibagaki”). This rejection is respectfully traversed. Shibagaki fails to

remedy the deficiencies of Takamura et al. and Arntz et al. Withdrawal of this rejection is respectfully requested.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully submit that all of the pending claims are now in condition for allowance. An early notice to this effect is earnestly solicited. If there are any questions regarding the application, the Examiner is invited to contact the undersigned at the number below.

Respectfully submitted,

Date 9/19/06
FOLEY & LARDNER LLP
Customer Number: 22428
Telephone: (202) 672-5540
Facsimile: (202) 672-5399

By P.D.S.

Richard L. Schwaab
Attorney for Applicant
Registration No. 25,479

Paul D. Strain
Attorney for Applicant
Registration No. 47,369

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.